

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously presented) A supported catalyst system suitable for the polymerisation of olefins comprising

(a) metallocene having the formula:



wherein Cp is a single cyclopentadienyl or substituted cyclopentadienyl group optionally covalently bonded to M through a substituent, M is a Group VIA metal bound in a η^5 bonding mode to the cyclopentadienyl or substituted cyclopentadienyl group, X each occurrence is hydride or a moiety selected from the group consisting of halo, alkyl, aryl, aryloxy, alkoxy, alkoxyalkyl, amidoalkyl, and siloxyalkyl having up to 20 non-hydrogen atoms and neutral Lewis base ligands having up to 20 non-hydrogen atoms or optionally one X together with Cp forms a metallocycle with M and n is dependent upon the valency of the metal,

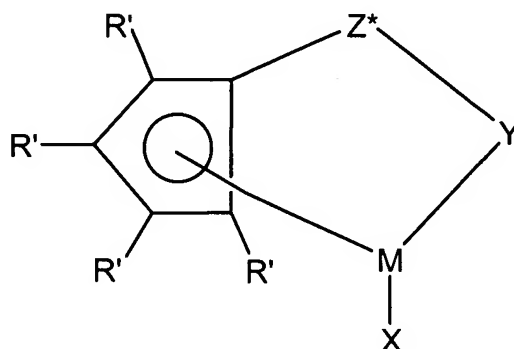
(b) a non-aluminoxane activator, and

(c) a support material comprising an inorganic metal oxide, inorganic metal halide or polymeric material or mixtures thereof, wherein the support material has been pretreated with an SO_4 containing compound.

2. (Original) A supported catalyst system according to claim 1 wherein the support material is silica.

3-4. (Cancelled).

5. (Currently amended) A supported catalyst system according to claim 1 wherein the metallocene is represented by the general formula:



wherein:

R' each occurrence is independently selected from hydrogen, hydrocarbyl, silyl, germyl, halo, cyano, and or combinations thereof, said R' having up to 20 nonhydrogen atoms, and optionally, two R' groups (where R' is not hydrogen, halo or cyano) together form a divalent derivative thereof connected to adjacent positions of the cyclopentadienyl ring to form a fused ring structure;

X is a neutral η^4 bonded diene group having up to 30 non-hydrogen atoms, which forms a π -complex with M;

Y is -O-, -S-, -NR^{*}-, -PR^{*}-,

M is titanium or zirconium in the + 2 formal oxidation state;

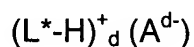
Z^{*} is SiR^{*}₂, CR^{*}₂, SiR^{*}₂SiR^{*}₂, CR^{*}₂CR^{*}₂, CR^{*}=CR^{*}, CR^{*}₂SiR^{*}₂, or GeR^{*}₂,

wherein:

R* each occurrence is independently hydrogen, or a member selected from hydrocarbyl, silyl, halogenated alkyl, halogenated aryl, [[and]] or combinations thereof, said

R* having up to 10 non-hydrogen atoms, and optionally, two R* groups from Z* (when R* is not hydrogen), or an R* group from Z* and an R* group from Y form a ring system.

6. (Previously presented) A supported catalyst system according to claim 1 or 2 wherein the activator is represented by the formula:



wherein

L* is a neutral Lewis base

$(L^*-H)^+_d$ is a Bronsted acid

A^{d-} is a non-coordinating compatible anion of a Group IIIA metal or metalloid having a charge of d⁻, and

d is an integer from 1 to 3.

7. (Original) A supported catalyst composition according to claim 6 wherein the anion comprises a boron metal.

8. (Original) A supported catalyst system according to claim 6 wherein the activator comprises a cation and an anion wherein the anion has at least one substituent comprising a moiety having an active hydrogen.

9. (Previously presented) A supported catalyst system according to claim 1 wherein the SO₄ containing compound is a transition metal sulphate.

10. (Original) A supported catalyst system according to claim 9 wherein the transition metal sulphate is a sulphate of iron or copper.

11. (Previously presented) A supported catalyst system according to claim 1 wherein the SO₄ containing compound is ammonium sulphate or sulphuric acid.

12. (Currently amended) A process for the polymerisation of olefin ~~monomers~~ monomer(s) selected from (a) ethylene, (b) propylene (c) mixtures of ethylene and propylene ~~[[and]]~~ or (d) mixtures of (a), (b) or (c) with one or more other alpha-olefins, ~~said process performed~~ comprising polymerising said olefin monomer(s) under polymerisation conditions in the presence of a supported catalyst system according to claim 1.

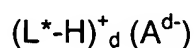
13. (Currently amended) A process for the polymerisation of ethylene or the copolymerisation of ethylene and an alpha-olefin ~~alpha-olefins~~ having from 3 to 10 carbon atoms, ~~said process performed~~ comprising polymerising said ethylene or ethylene and an alpha-olefin under polymerisation conditions in the presence of a supported catalyst system according to claim 1.

14. (Currently amended) A process according to claim 12 wherein the alpha-olefins are 1-butene, 1-hexene, 4-methyl-1-pentene ~~[[and]]~~ or 1-octene.

15. (Previously presented) A process according to claim 12 which is carried out in the gas phase.

16. (Previously presented) A supported catalyst system suitable for the polymerisation of olefins comprising

- (a) a transition metal compound,
- (b) an activator represented by the formula:



wherein

L* is a neutral Lewis base

$(L^*-H)^+_d$ is a Bronsted acid

A^{d-} is a non-coordinating compatible anion of a Group IIIA metal or metalloid having a charge of d^- , and

d is an integer from 1 to 3, and

(c) a support material comprising an inorganic metal oxide, inorganic metal halide or polymeric material or mixtures thereof, wherein the support material has been pretreated with an SO_4 containing compound.

17. (Previously presented) A supported catalyst system according to claim 16 wherein the support material is silica.

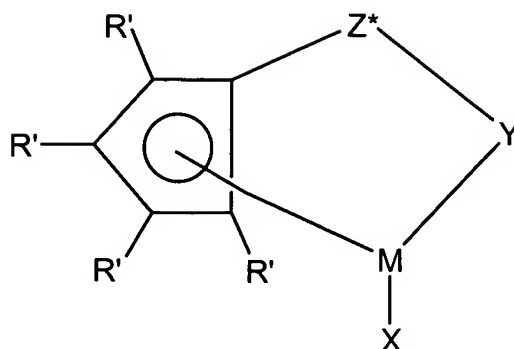
18. (Previously presented) A supported catalyst system according to claim 16 or 17 wherein the transition metal compound is a metallocene.

19. (Previously presented) A supported catalyst system according to claim 18 wherein the metallocene has the formula:



wherein Cp is a single cyclopentadienyl or substituted cyclopentadienyl group optionally covalently bonded to M through a substituent, M is a Group VIA metal bound in a η^5 bonding mode to the cyclopentadienyl or substituted cyclopentadienyl group, X each occurrence is hydride or a moiety selected from the group consisting of halo, alkyl, aryl, aryloxy, alkoxy, alkoxyalkyl, amidoalkyl, and siloxyalkyl having up to 20 non-hydrogen atoms and neutral Lewis base ligands having up to 20 non-hydrogen atoms or optionally one X together with Cp forms a metallocycle with M and n is dependent upon the valency of the metal.

20. (Currently amended) A supported catalyst system according to claim 18 wherein the metallocene is represented by the general formula:



wherein:

R' each occurrence is independently selected from hydrogen, hydrocarbyl, silyl, germyl, halo, cyano, **[[and]]** or combinations thereof, said R' having up to 20 nonhydrogen atoms, and optionally, two R' groups (where R' is not hydrogen, halo or cyano) together form a divalent derivative thereof connected to adjacent positions of the cyclopentadienyl ring to form a fused ring structure;

X is a neutral **[[in a]]** η^4 bonded diene group having up to 30 non-hydrogen atoms, which forms a π -complex with M;

Y is -O-, -S-, -NR^{*}-, -PR^{*}-,

M is titanium or zirconium in the + 2 formal oxidation state;

Z^{*} is SiR^{*}₂, CR^{*}₂, SiR^{*}₂SiR^{*}₂, CR^{*}₂CR^{*}₂, CR^{*}=CR^{*}, CR^{*}₂SiR^{*}₂, or GeR^{*}₂,

wherein:

R^{*} each occurrence is independently hydrogen, or a member selected from hydrocarbyl, silyl, halogenated alkyl, halogenated aryl, **[[and]]** or combinations thereof, said

R* having up to 10 non-hydrogen atoms, and optionally, two R* groups from Z* (when R* is not hydrogen), or an R* group from Z* and an R* group from Y form a ring system.

21. (Previously presented) A supported catalyst composition according to claim 16 wherein the anion comprises a boron metal.

22. (Previously presented) A supported catalyst system according to claim 16 wherein the activator comprises a cation and an anion wherein the anion has at least one substituent comprising a moiety having an active hydrogen.

23. (Previously presented) A supported catalyst system according to claim 16 wherein the SO₄ containing compound is a transition metal sulphate.

24. (Previously presented) A supported catalyst system according to claim 23 wherein the transition metal sulphate is a sulphate of iron or copper.

25. (Previously presented) A supported catalyst system according to claim 16 wherein the SO₄ containing compound is ammonium sulphate or sulphuric acid.

26. (Currently amended) A process for the polymerisation of olefin ~~monomers~~ monomer(s) selected from (a) ethylene, (b) propylene (c) mixtures of ethylene and propylene ~~[[and]]~~ or (d) mixtures of (a), (b) or (c) with one or more other alpha-olefins, ~~said process performed~~ comprising polymerising said olefin monomer(s) under polymerisation conditions in the presence of a supported catalyst system according to claim 16.

27. (Currently amended) A process for the polymerisation of ethylene or the copolymerisation of ethylene and an alpha-olefin ~~alpha-olefins~~ having from 3 to 10 carbon atoms, ~~said process performed~~ comprising polymerising said ethylene or

ethylene and an alpha-olefin under polymerisation conditions in the presence of a supported catalyst system according to claim 16.

28. (Currently amended) A process according to claim 26 wherein the alpha-olefins are 1-butene, 1-hexene, 4-methyl-1-pentene ~~[[and]]~~ or 1-octene.

29. (Previously presented) A process according to claim 26 which is carried out in the gas phase.